



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,118	08/25/2003	Soon Shin Chee	X-1389 US	3199
24309	7590	01/23/2006	EXAMINER	
XILINX, INC ATTN: LEGAL DEPARTMENT 2100 LOGIC DR SAN JOSE, CA 95124			HA, NATHAN W	
			ART UNIT	PAPER NUMBER
			2814	

DATE MAILED: 01/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,118

Applicant(s)

CHEE ET AL.

Examiner

Nathan W. Ha

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-11, 14, 15, 17, 19, 20 and 37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 4-11, 14-15, 17, 19-20, and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-11, 15, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rumer et al. (US 2004/0238947, previously cited, hereinafter, Rumer) and in view of Tosaya et al. (US 6,538,320, previously cited, hereinafter, Tosaya.)

In regard to claims 1 and 11, in figs. 2 and 3, Rumer discloses a conductive lid 206 adapted to function as a heat sink (heatspreader) for an integrated circuit (die) 204, said conductive lid comprising:

a recessed portion adapted to receive a die 204;

a foot portion at the 222 having a surface adapted to be coupled to a substrate 202 of said integrated circuit; and

a through-hole 216 located in said foot portion, said through hole being tapered and adapted to receive an element to secure said conductive lid to said substrate of said integrated circuit.

Rumer appears to disclose some ways to attach the lid to the substrate such as rivets, gripping clips, threaded fasteners, and non-threaded fasteners. Rumer, however, does not expressly teach using an adhesive to secure the lid to the substrate.

Tosaya, in fig. 4, as previously mentioned, discloses an analogous package including a substrate 112, a cavity which includes a chip 114, and a lid 102, wherein the lid is attached to the substrate through the through holes by using adhesive 116 in order to establish a riveted connection and provide lateral securement of the heat spreader (col. 2, lines 60-67.)

Therefore, it would have been obvious to recognize that one of the ways to attach these devices as mentioned by Rumer to use adhesive as taught by Tosaya in order to establish a riveted connection and provide lateral secure of the heat spreader.

In regard to claims 4-5, 9-10, and 15, Rumer further discloses that the through hole comprises a multi-diameter wholes such cylindrical portions, see fig. 2.

In regard to claims 6-7, regarding the processing limitations (injection, drilling, etc.), these would not carry patentable weight in this claim drawn to structure. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985). Rumer, however, discloses that the river is formed by mandrill, see [0020].

In regard to claim 8, wherein said foot portion extends around said recessed portion. See Rumer's figs. 2 and 3.

In regard to claim 9, Tosaya further discloses plurality of through-holes positioned in said foot portion. See also, fig. 3.

In regard to claim 10, wherein said plurality of holes are symmetrically spaced around said foot portion. See fig. 3.

In regard to claim 20, Tosaya discloses the resin in the through hole and between the substrate and the lid, fig. 4.

3. Claims 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rumer and Tosaya as applied to claims 1, 4-11, 15, 18, and 20 above, and further in view of Murayama (previously cited.)

In regard to claims 17 and 19, Rumer and Tosaya discloses all of the claimed limitations as mentioned above except mention the material of the adhesive element. It should be noted that adhesive in this semiconductor area is normally formed by thermal adhesive resin since this material delivers heat from the inside through the heat sink. For instance, Murayama, in fig.2, discloses an analogous package that includes chip 14, heat sink 18, substrate 12. Murayama, further teaches the heat sink is attached to the substrate through thermal conductive adhesive 17 in order to transfer heat to the outside of the package. See also, [0053].

Therefore, it would have been obvious to one of ordinary skilled in the art at the time of the invention was made to recognize that the material of the adhesive in order to facilitate the process of transferring heat out of the package.

4. Claims 14 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rumer as applied to claims 1, 4-11, 15, 18, and 20 above.

In regard to claims 14 and 37, Rumer discloses all of the claimed limitations as mentioned above except of the specific shapes as claimed in claims 14 and 37.

At the time of the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the holes with a conical shape frustum shape because applicant has not disclosed that [these shapes] provide an advantage, is used for a particular purpose, or solve a stated problem. One of ordinary skill in the art, furthermore, would have expected applicant's invention to perform equally well with either shape because they perform the same function of positioning the module to the substrate.

Therefore, it would have been obvious to one of ordinary skill in the art to modify Rumer to obtain the invention as specify in the above claims.

Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

Note that the specification contains no disclosure of either the critical nature of the claimed dimensions of any unexpected results arising therefrom. Where patentability is aid to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

Response to Arguments

5. Applicant's arguments filed 11/21/05 have been fully considered but they are not persuasive. For instance, the Applicants contend that the cited art, Rumer, teaches away from the use of the adhesive for attaching the lid to the substrate. The fact that Rumer mentioned another way of attaching the components does not exclude the use of the adhesive. In fact Rumer uses a fastener in order to modify the conventional such as adhesive. This is commonly used in the art of packaging. Therefore, it renders the obviousness, and indeed the combination is proper.

6. In response to applicant's argument that there is no suggestion to combine the references, or the combination is improper, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, as mentioned above, the adhesive can be used to substitute with the fastener since this substitution does not change the device's final structure as well as its functions.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan W. Ha whose telephone number is (571) 272-1707. The examiner can normally be reached on M-TH 8:00-7:00(EST).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/648,118
Art Unit: 2814

Page 8

Nathan Ha
January 10, 2006



HOAI PHAM
PRIMARY EXAMINER